LAN Master™ TX8

100BASE-TX 8-Port Hub

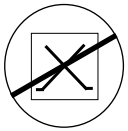
(HB-E-TX-8)

33013.C

For assistance in installing, using, or maintaining the TRANSITION Networks LAN Master™ TX8 100BASE-TX 8-Port Hub, contact TRANSITION Networks Technical Support at:

(800) 260-1312

or contact your local distributor.



CAUTION: RJ connectors are NOT INTENDED FOR CONNECTION TO THE PUBLIC TELEPHONE NETWORK. Failure to observe this caution could result in damage to the public telephone network.

Der Anschluss dieses Gerätes an ein öffentlickes Telekommunikationsnetz in den EG-Mitgliedstaaten verstösst gegen die jeweligen einzelstaatlichen Gesetze zur Anwendung der Richtlinie 91/263/EWG zur Angleichung der Rechtsvorschriften der Mitgliedstaaten über Telekommunikationsendeinrichtungen einschliesslich der gegenseitigen Anerkennung ihrer Konformität.

Compliance Information
UL Listed
C-UL Listed (Canada)
CISPR/EN55022 Class A

FCC Regulations
This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at the user's own expense.

Canadian Regulations
This digital apparatus does not exceed the Class A limits for radio noise for digital apparatus set out on the radio interference regulations of the Canadian Department of Communications.

European Regulations
Warning
This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Copyright Restrictions

Trademark Notice
All registered trademarks and trademarks are the property of their respective owners.

LAN MASTER™ TX8 SPECIFICATIONS

Standards

IEEE 802.3u 100BASE-TX Class 2 (unstacked)

Physical

Dimensions

17' x 10' x .1.8' (438 mm x 255 mm x 45 mm)

Shipping Weight

9 lbs (4.1 kg)

Input Power

Internal universal input; 100–240VAC, 50/60 Hz, 53W

AC Input Cord:

TN PN	Requirement	Location
3344	120 volts, 60 hertz	USA/Canada/Mexico
3344	100 volts, 50-60 hertz	Japan
3347	230 volts, 50 hertz	Europe
3348	240 volts, 50 hertz	Australia
3349	240 volts, 50 hertz	United Kingdom

MTBF

50,000 hours

Environment

Temperature:	0-50°C (32° to 122° F)
Humidity	10-90%, non condensing
Altitude	0-10,000 feet

Warranty

lLifetime

100BASE-TX Cable and Connector Specifications

The physical characteristics of the 100BASE-TX cable must meet or exceed IEEE 802.3u 100BASE-TX specifications.

100BASE-TX CABLE SPECIFICATIONS

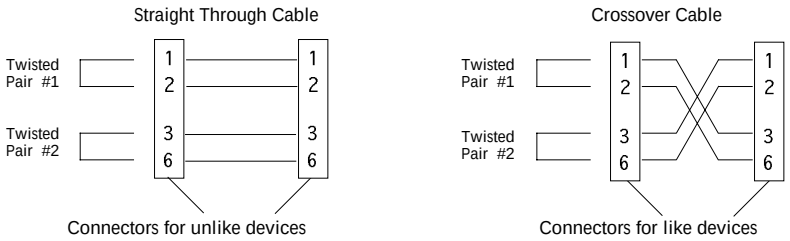
Category 5 wire or better is required. Either shielded twisted pair (STP) or unshielded twisted pair (UTP) can be used. DO NOT USE FLAT OR SILVER SATIN WIRE.

Category 5:		
	Gauge	24 to 22 AWG
	Attenuation	20 dB/1000' @ 10 MHz
	Impedance	100 Ω ±10% @ 10 MHz
Maximum Cable Distance:		100 meters (330 feet)

100BASE-TX CONNECTOR CHARACTERISTICS:

The 100BASE-TX connectors are standard RJ-45 connectors with standard pinning.

The two active pairs in a 100BASE-TX network are pins 1 & 2 and pins 3 & 6. Use only dedicated wire pairs (such as blue/white & white/blue, orange/white & white/orange) for the active pins. 100BASE-TX cable for unlike devices (such as hub to terminal device) must be configured as straight through; 100BASE-TX cable for like devices (such as hub to hub or terminal device to terminal device) must be configured as crossover.



NOTE: MDI/MDI-X connectors on hubs allow straight-through cable to be used in a crossover configuration for hub to hub connection.

Table of Contents

1. INTRODUCTION

This guide is intended for the system or network administrator responsible for installing and monitoring a TRANSITION Networks LAN Master™ TX-8 100BASE-TX 8-Port Hub. A working knowledge of local area network (LAN) operations, including familiarity with communications protocols used on interconnected LANs, is assumed.

The LAN Master™ TX8 Hub

The LAN Master™ TX8 100BASE-TX 8-Port Hub (HB-E-TX-8) is a Fast Ethernet repeater designed to meet IEEE 802.3u 100BASE-TX standards.

LAN Master™ TX8 Hub Features

- Eight RJ-45 100BASE-TX ports for Fast Ethernet connectivity
- Port #8 provides LAN Master™ TX8-to-LAN Master™ TX8 MDI/MDI-X uplink option
- 19-inch rack mountable
- Auto partitioning of ports with excessive collisions
- Fully automatic preamble regeneration
- Internal universal input power supply

FAST ETHERNET (IOOBASE-X) CABLE SPECIFICATIONS

Due to the limited collision domain in 100BASE-X, use the shortest cables possible to make a connection between any two devices. Where collisions are not a consideration (full duplex), longer cable may be possible.

Effective cable distances are determined by ambient RF noise and by signal loss in the cable. Since fiber has low signal loss/meter and invulnerability to RF noise, fiber is the preferred medium for extending distances.

100BASE-FX Cable and Connector Specifications

The physical characteristics of the 100BASE-FX cable must meet or exceed IEEE 802.3 100BASE-FX specifications.

100BASE-FX CABLE SPECIFICATIONS

Fiber Optic Cable Recommended:	62.5 / 125 µm multimode fiber
Optional:	100 / 140 µm multimode fiber
	85 / 125 µm multimode fiber
	50 / 125 µm multimode fiber
Fiber Optic Transmitter Power:	
Average power:	-19.0 dBm
Fiber Optic Receiver Sensitivity:	
Average sensitivity:	-33.5 dBm
Bit error rate:	$\leq 10^{-10}$
Maximum Cable Distance:	2000 meters (6500 feet)

100BASE-FX CONNECTOR CHARACTERISTICS:

The 100BASE-FX connectors are standard ST connectors.

SC connectors are available.

The sole purpose of this remedy shall be provided the customer with the replacement or repair of non-conforming goods in the manner described in this Warranty statement. This exclusive remedy shall not be deemed to have failed of its essential purpose so long as TN is willing and able to repair or replace the defective item(s) or refund the purchase price.

TN reserves the right to inspect products claimed to be defective under warranty either at the customer's location or at TN's plant. TN assumes no liability for liability charges incidental to the adjustment, service, repairing, removal or replacement of the product, or other costs, or the expense of repairs made outside of its factory, except when made with TN's prior written consent. Additionally, Transition Networks reserves the right to charge for all testing and shipping incurred, if after testing, a return is classified as "No Problem Found".

TN's total liability in connection with the products and their installation to all persons and from all causes in the aggregate, whether in contract, tort, or strict liability, shall not exceed the amount paid to TN for the product directly related to the alleged damage. However, in no event shall TN have any liability to a customer or any third party for products manufactures according to the customer's specifications.

C. Return Procedure

The customer must follow this procedure for the return of defective items:

1. Locate the serial number(s) of the item(s) to be returned.
2. Determine the date the item(s) was received.
3. Contact Transition Networks Technical Support to determine if the problem can be corrected on site.

If not, and the product is covered by warranty, then:

- Call the distributor directly or contact TN.
- Request a Return Material Authorization (RMA).
- Ship the item, prepaid in original packaging to Transition Networks at the above address.
- Include the RMA number on the outside of the carton and/or on the Packing List.
- Include a copy of the RMA form.
- Include a copy of the original invoice or packing list (if possible) to expedite processing.
- The item(s) may be shipped by the customer or the distributor.
- Transition Networks will repair or replace the unit, at TN's discretion, and cover the cost of the return freight to the distributor or to the customer, whichever requested the RMA number.

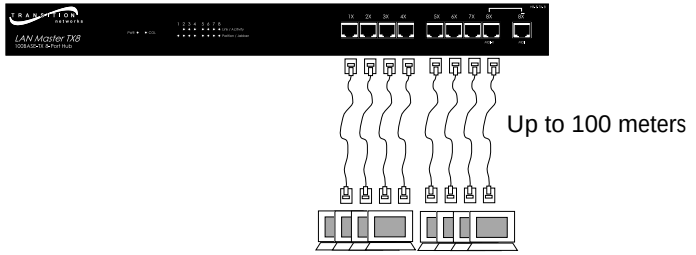
If the item(s) was received **more than five years ago**, or if the item(s) is **no longer covered by warranty** for other reasons, then:

- Call the distributor or contact TN.
- Request a Material Repair Authorization number (MRA).
- Ship the item(s), prepaid, in the original packaging to Transition Networks at the above address.
- Include the MRA number on the outside of the carton add/or on the Packing List.
- Include a copy of the MRA form.
- Include a copy of the original invoice or packing list (if possible) to expedite processing.
- Only the customer (end-user) may send the items(s) to TN.
- TN will contact the customer after the item(s) have been received, inspected, and a cost estimate of the repair determined.
- The repair charges may be billed, with customer's approval, though the distributor, or on a prepaid or C.O.D. basis directly to the customer. The charges will include the cost of shipping.

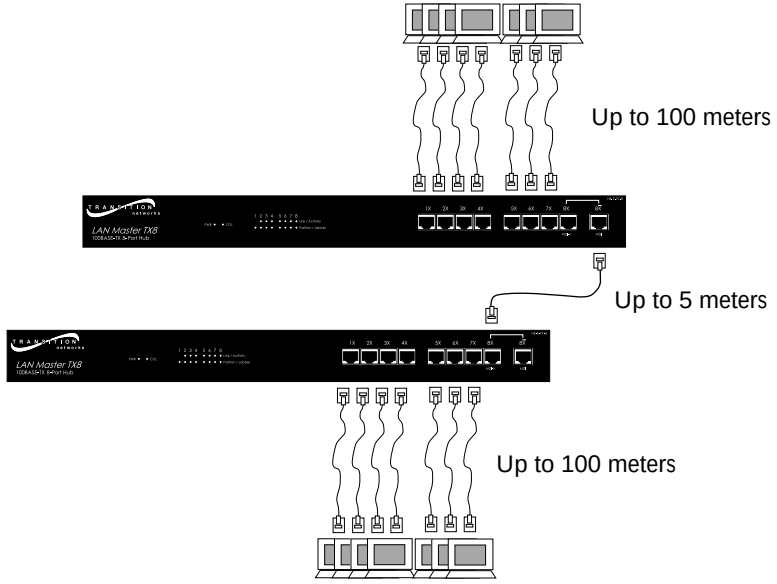
The return authorization numbers are valid only for 90 days from the date issued.

Networking the LAN Master™ TX8 Hub

Use the LAN Master™ TX8 100BASE-TX 8 port hub alone to provide eight RJ-45 Fast Ethernet port connections.



Cascade two LAN Master™ TX8 hubs, using the uplink port at the front of the hubs, to provide fourteen RJ-45 Fast Ethernet port connections.



LAN Master™ TX8 Connectors and Status LEDs

RJ-45 Connectors

Eight (8) 100BASE-TX RJ-45 connectors are located at the front of the LAN Master™ TX8. The RJ-45 jacks support connection to Category 5 shielded or unshielded 100 ohm twisted pair 100BASE-TX cable.

Power Connector

An external power connector is located at the back of the LAN Master™ TX8.

Status LEDs

Status LEDs are located at the front of the LAN Master™ TX8.

P(O)W(E)R	*Illuminated green:* Hub powered ON.
COL(LISION)	*Illuminated amber*: Collision detected during data transmission on ANY port.
LINK/ACTIVITY	*Illuminated green:* Port link established. *Flashing green:* Data being received.
PARTITION/JABBER	*Flashing yellow:* Data jabber and error detected on port. *Illuminated yellow:* Port partitioned and isolated.

Warranty Statement

A. Five Year Warranty

Transition Networks, Inc. (TN) warrants, for a period of five years, that TN products (with the exception of power supplies and fans that TN warrants for two years) will be free from defects in materials and workmanship, and will be in conformity with TN's specifications.

TN's warranty on products manufactured by or assembled for TN in accordance with a customer's specifications, is a five-year warranty that the goods conform to such specifications.

The warranty is invalidated if the goods have been subject to alterations, misuse, accident, Acts of God (e.g., damage by floods, lightning strikes, Etc.), tampering, improper maintenance, improper installation, or abuse. If the user is unsure about the proper means of installing or using the equipment, contact TN's free Technical Support or Network Design Services, which can be reached by:

Telephone	**1.800.LAN.WANS or 612.941.7600**
Fax	**612.941.2322**
E-mail	**techsupport@transition.com**
Internet	**http://www.transition.com**

THE ABOVE WARRANTY IS EXCLUSIVE AND EXTENDS ONLY TO PRODUCTS ASSEMBLED BY TRANSITION NETWORKS, INC. TO THE EXTENT PERMITTED BY LAW, TN DOES NOT MAKE AND DISCLAIMS ALL OTHER WARRANTIES, EXCEPT TITLE, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTY OF DESCRIPTION, MERCHANTIBILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT, AND ANY WARRANTY BASED UPON PRIOR WRITTEN OR ORAL REPRESENTATIONS REGARDING SUCH PRODUCTS MADE BY TN, ITS EMPLOYEES, AGENTS, OR REPRESENTATIVES.

B. Limitations and Exclusions

If the customer believes any goods sold by TN are defective and within the warranty period, the following general procedure will be followed:

1. Locate the serial number and delivery date of the item(s).
2. Notify TN within the warranty period.
3. TN will promptly issue a return authorization form for the goods.
4. Upon receiving the form, the customer will promptly return the item(s) at customers own expense, shipped prepaid, to the distributor from which it was purchased, or directly to TN.

TN will only accept goods for return if the following conditions have been met:

1. A return form is obtained from TN.
2. The freight charges have been prepaid by the customer.
3. Goods are re-packed in their original packaging.

If under warranty TN shall, at its option, (1) repair the goods free of charge (2) replace the goods free of charge, or (3) accept the return of the item(s) and credit the current price to the reseller (within 90 days of purchase), or (4) if the goods are not under warranty, will repair the item(s) at a minimum charge of USD $200 (two hundred U.S. dollars) per item.

THIS IS THE EXCLUSIVE REMEDY FOR ANY BREACH OF WARRANTY. IN NO EVENT SHALL TRANSITION NETWORKS BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND, WHETHER FOR BREACH OF ANY CONDITION OF SALE, FOR NEGLIGENCE, ON THE BASIS OF STRICT LIABILITY, CONTRACT, OR OTHERWISE AND IRRESPECTIVE OF WHETHER TN IS INFORMED BY CUSTOMER OF THE POSSIBILITY OF SUCH DAMAGES IN ADVANCE OF THIS SALE.

5. MAINTENANCE

WARNING: DO NOT, UNDER ANY CIRCUMSTANCES, open and attempt to repair the LAN Master™ TX8 100BASE-TX 8-Port Hub. Failure to observe this warning could result in personal injury or death from electrical shock.

NOTE: Failure to observe the above warning will immediately void the warranty.

Fault Isolation

If two network devices fail to communicate through the LAN Master™ TX8, consider the following:

- Are the LEDs described in the previous section functioning properly?
- Do network devices have Link Integrity enabled?
- Do network devices communicate when the LAN Master™ TX8 is not installed between them?
- Is flat or “silver satin” wire used in site internal wiring?
- Are internal wiring patch cords, punch down blocks, and wall jacks properly pinned or configured?
- Are network interface cards properly configured?

Technical Support Contact

For assistance in fault isolation and in maintaining the LAN Master™ TX8 100BASE-TX 8-Port Hub, contact:

Technical Support (800) 260-1312

or your local distributor.

2. SITE CONSIDERATIONS

The site for the LAN Master™ TX8 hub must provide:

- AC power outlet for each hub
- Adequate ventilation
- Standard environmental conditions
- Isolation from electrical noise, including radio transmitters and broadband amplifiers, motors, high power electrical lines, or fluorescent light fixtures.

Additionally:

- The twisted pair cables should not run in the same conduit with power line cables
- Phone lines should be separated from data cables
- Flat or “silver satin” wires should not be used.

And:

- Since the LAN Master™ TX8 functions as an Ethernet Repeater, the entire installation should comply with the IEEE Ethernet 802.3 specification.

3. INSTALLATION

NOTE: LAN Master™ TX8 Link Integrity cannot be disabled. All devices connected to the LAN Master™ TX8 MUST have link functions enabled.

To install the LAN Master™ TX8:

- Unpack the LAN Master™ TX8 Hub.
- Install LAN Master™ TX8 on shelf or in rack
- Optionally cascade LAN Master™ TX8 hubs
- Connect 100BASE-TX cable to LAN Master™ TX8
- Connect the LAN Master™ TX8 to power.

Direction is provided in the pages that follow.

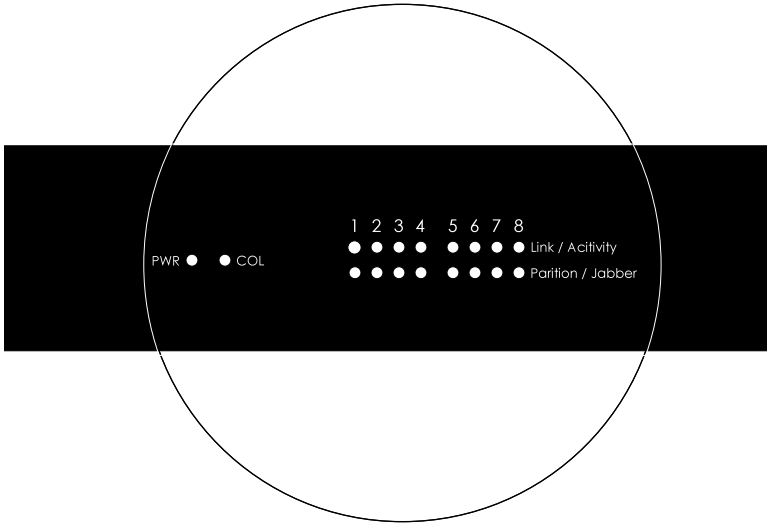
Unpacking the LAN Master™ TX8

The LAN Master™ TX8 packing contents should include the following:

Item	Part Number
LAN Master™ TX8	HB-E-TX-8
Power Cord	3344, 3347, 3348, 3349, or 3523, (depending upon power configuration in country where installed)
User's Guide	33012

4. OPERATION

The LAN Master™ TX8 normally requires no intervention beyond occasionally monitoring the Power and Port Status LEDs.



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Connecting Power to LAN Master™ TX8

To power ON the LAN Master™ TX8:

1. Locate the power receptacle on the back of the LAN Master™ TX8.
2. Connect the LAN Master™ TX8 power connector end of the power cord to the LAN Master™ TX8.
3. Connect the external power connector end of the power cord to external AC power.

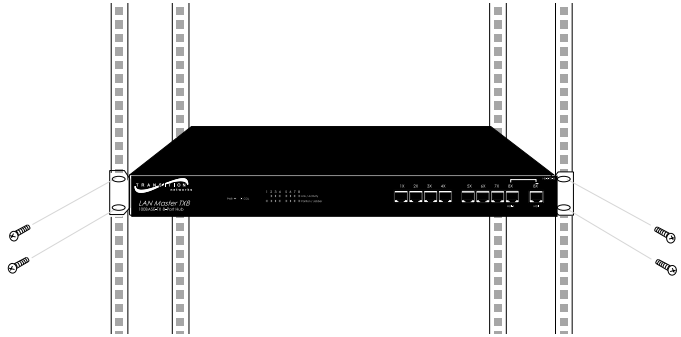
NOTE: After power is supplied to the LAN Master™ TX8, the green **Power** LED is illuminated.

Installing LAN Master™ TX8 in 19-inch Rack

NOTE: Optionally, the LAN Master™ TX8 can be installed on a table or other flat, stable surface.

NOTE: The LAN Master™ TX8 is shipped with attached brackets for standard 19-inch rack installation. Rackmount screws and clip nuts are NOT provided.

To install the LAN Master™ TX8 in 19-inch rack:

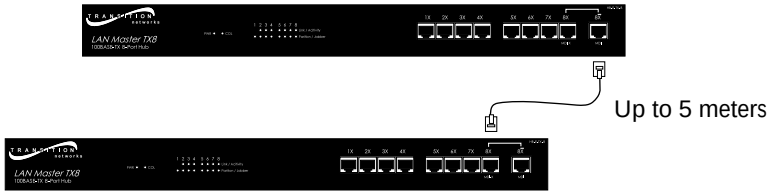


1. Locate four (4) screws (and clip nuts, if necessary) for each LAN Master™ TX8 to be installed.
2. Carefully align the LAN Master™ TX8 between the 19-inch rack mounting rails at the installation position.
3. Install two screws through right front bracket and two screws through left front bracket, using clip nuts if necessary.

Optionally Cascading Two LAN Master™ TX8 Hubs

Two LAN Master™ TX8 hubs can be cascaded using the two connections at the front of each hub that are labelled ‘Port 8’.

To cascade two LAN Master™ TX8 hubs:



1. Locate or build 100BASE-TX cable with the following characteristics:
   - 803.2 compliant (See page 15)
   - cable length less than 5 meters
   - male RJ-45 plug connectors installed at both ends of cable.

2. Connect male RJ-45 plug connector at one end of 100BASE-TX cable to Port 8 connector marked MDI-X.

3. Connect male RJ-45 plug connector at other end of 100BASE-TX cable to Port 8 connector marked MDI.

Connecting 100BASE-TX Cable

To connect 100BASE-TX Cable to LAN Master™ TX8 RJ-45 connectors:

1. Locate or build 100BASE-TX cables with the following characteristics:
   - 803.2 compliant (See page 15)
   - cable length less than 100 meters
   - male RJ-45 plug connectors installed at both ends of cable.

2. Connect male RJ-45 plug connector at one end of 100BASE-TX cable to LAN Master™ TX8 RJ-45 jack connector.

3. Connect male RJ-45 plug connector at other end of 100BASE-TX cable to terminal device RJ-45 jack connector.